

Appendix 1: Public Outreach of the Illinois Special Task Force

January 9, 2004, Safety Issues

Gas Technology Institute—Melanie Kenderdine, Vice President

Peoples Gas—Rodrigo Sierra, Vice President of Corporate Communications, Frank Andrejasich, General Manager of Engineering, and David Lazzaro, General Manager of Gas

Nicor—Scot Lewis, General Manager, Government Relations

Federal Energy Management Agency—Edward Buikema, Region V Regional Director

Illinois Commerce Commission—Bob Bensko, Homeland Security Director

Illinois Department of Public Health—Enrique Unanue, Deputy Director of the Office of Health Care Regulation, and Leslie Stein-Spender, EMS & Highway Safety Office of Public Health and Emergency Preparedness

January 23, 2004, Utility Companies

Commonwealth Edison—Frank Clark, President

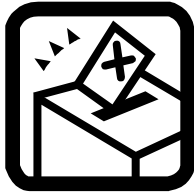
Illinois Power—Larry Altenbaumer, President

Ameren—Mark C. Birk, Vice President of Ameren Services Energy Supply Operations

MidAmerican Energy—Brent Gale, Vice President for Legislation & Regulation

Midwest Generation—Fred McCluskey, Vice President & Chief Technical Officer

Appendix 2: Voice of the People



Below are a few of the many comments from the 30,000 visitors to BlackoutSolutions.org. To submit your comments to the electronic suggestion box, go to BlackoutSolutions.org. The comments are unedited except to remove identifying information. The opinions expressed herein do not necessarily represent the opinions of the Illinois Special Task Force.

"The commonwealth edison system is in extreme danger of imploding. The number of feeders being tied together throughout the system is at a dangerous level. Being a lineman for Comed, I see this almost daily. The purpose of tying feeders together is actually to reduce overtime costs. It's a quick fix and is often forgotten about. The staffing levels at all Comed plants are also dangerously low. We are probably at 1/3 of the manpower levels of ten years ago. I hope you are asking the right questions of our management people, and investigating their answers, as they are compulsive liars and con artists. The workers know it, the management knows it, the citizens need to know it, a week or so of extreme weather will shut down this system and we haven't the manpower to face a problem like that. You need to ensure that Exelon stops putting corporate profits above common sense transmission and distribution problems. I'll stay informed of your progress and hope that you contact and speak to some of the electrical linemen and other utility workers. P.S I wish to remain anonymous as I value my job and we have already been told not to communicate with the ICC or other investigative bodies."

"I would suggest you look at the "Exelon Way". It is not as they say , with teams of people who know the company making changes. For example, the Nuclear side was management heavy, so to preserve those extra managers jobs, they put them in charge of construction and maintenance. So now people with NO IDEA how to do the work or what it even consists of , are making decisions. Add to this managers hired from out side the company, people from the gas company or ex military people who also have NO CLUE about this work. The nuclear managers don't understand that working outside is NOT like working in a controlled environment inside. Yet these are the leaders making the decisions about how to do the work. They then use totalitarian methods to put fear into their workers. They feel a wok group will be more productive if they fear for their jobs. Threats of days off If you decline overtime, but then in the same breath, they tell you your working too much overtime! Please look beyond the corporate rhetoric and go to the core of the issue, the ones actually doing the work to keep the lights on."

"if you want to know about electric lines in the state talk to the linemen that work on them every day and night. you will get the truth about the problems. you ask the utilities about staffing they will tell you they have the workforce to do the maintenance. illinois power has approx. 200 linemen to cover 650,000 customers, but ip has a total of approx. 2000 employment company wide, that is 10-1 ratio. my suggestion is for the task force to pick at random any city or town find out what company covers that area and go out with the line crews and see for themselves. remember i said go with the crews not supervisors, managers or anyone else. i also beleave the icc should have a telephone hotline for linemen to call and report problem areas. utilities tell you they can bring in contract crews to help with outages . but by the time contract companies can get their crews together customers have been with out power for hours. linemen would love to do the maintenance if given the material and man power. when deregulation hit spending on maintenance went down to cut cost. companies just do paper maintenance now . thanks for your time and concern for the people of illinois."

"I have worked for ... years as ... for CIPS which is now Ameren. I would like you to consider the following recomedations. In my own plant we have laid-off Qualified employees and let employees with no experience perform jobs they have not been trained in and are not qualified to do. We have been building more power plants without substantially upgrading the transmission system which causes overloading of the existing lines. The company has eliminated line clearance crews, they have resorted to letting lines trip out due to trees and vines getting in to them and then calling out contractors to trim trees when they had been trimming them on a maintainence schedule, this is a clear indangerment of the public good. I don't beleive the building of large plants, Ultra-High voltage lines and long distance lines are the answer to our problems. These types of installations are more suceptable to terrorist attacks. They affect more of the population if tacken out. You cannot generate electricity in Florida and send it to New York it is physically impossible.

What we need is a more deversified grid system, more small plants and more lines supplying the customers. If you lose one line or one power station that's small there is no dramatic effect. A terrorist organization with any knowledge of our grid systom could shut down this country in a matter of minutes. I beleive that Deregulation should be suspended, it seems to have caused most of our problems.

We have gone from a Company tha has the Public good at heart to one that has the shareholders interests at heart at the cost of national security."

"This more a comment than a suggestion. I have worked for ComEd now Exelon Nuclear for over 20 years. ...Since the take over of ComEd to Exelon I can say that the only thing that Corporate Exelon cares about is the bottom line. (MONEY) The transmission side of the house only builds for today and could care less about tomorrow. Upper Management is in the bonus buissness today. How can Exelon make more money for the share holder and its senior managers. One way is the Exelon Way. Lay offs. This makes more people work longer hours and if you are in management, that means no overtime pay. Exelon is systemactically destroying its own infrastruccion, and its work force. ComEd was a great place to work, but not any more. Lying, cheating and stealing is a working condition."

"COMED is not repairing its many overhead wires and underground cables. Some portions of the system are in poor shape. They are only doing what is necessary to appease the public. Their stock prices stay up while the customer and the employees are getting the shaft."

"We recently opened our office in a rehabed building on Irving Park Road. The electric company pole just outside our office nearly fell down because it had rotted through. ComEd put a large yellow trailer transformer next to the condemned pole and after months, contractors working for ComEd have finally worked on the lines leading up to this contraption. I talked with the guys doing the work while they were there and during the time the blackout happened in the eastern US. They told me some very interesting stuff. They said that senior people at ComEd have been reporting vast improvements in the basic electric system, since the last blackouts and brownouts in Chicago a few years ago, but that much of the electric wires that are strung in neighborhoods like Lakeview, where our office is, and many other areas of the city, are not adequate for the power loads that are needed, particularly with all the construction and renovation that has been going on. But because no one in the government knows enough about electrical engineering, they don't have the information to probe deeply into exactly what is needed to hold ComEd truly accountable.

The guys who do the contract work for ComEd (I won't identify them, because I don't want them to lose their jobs) say the reports that ComEd turns in to the city are a joke. The same sort of thing that happened in New York could happen here. ComEd is more interested in the profits it makes than in upgrading the system, because every bit of expense to upgrade the infrastructure diminishes their profits. If you are really interested in finding out what's going on and what's really at risk, you should talk to the people who do the work on the electric system, and electrical engineers, who have a way of assessing whether ComEd is being open, or deceptive. Thanks for setting up this website and encouraging people to participate in the process. I heard about the website on WBBM-780 earlier today."

"1. Website Changes - link page: in addition to general site links for power companies also include the actual link people should use to report the down lines or technical problems - make sure it is the site that is being monitored 24/7 or get the best phone line to report this. 2. Human Factor at Power companies: With deregulation (and its every changing rules) there is much more concern with bottom line. There have been many downsizing waves, greater use of outsourcing and off shore contracting to lower costs. This can cause morale problems, lack of focus and a knowledge drain as the consultants take the knowledge with them giving only nominal turnover. Consider contingency drills. This could include simulating grid problems and recovery on a frequent basis. It might be necessary to have evacuation plans for commercial and residential high rise buildings that are really communicated to the people in the buildings.

The only company that I saw take disaster drills seriously was EDS at Blue Shield of California in '72. That was because there was a cash penalty for not turning a claims cycle and most of the EDS team were ex-military officers with combat experience who train for emergencies. Schools usually have adequate drills, but most other places do not. It is a pretense that we know what to do. Publish Energy conservation tips your receive and invite people to send in cards pledging to take specific actions with a "by when" for conservation and contingency planning. We all need to take ownership and responsibility for energy conservation, safety and emergency readiness within our families, work location, city, state and nation. Publish ongoingly statistic on what people / companies are pledging to do. Note: Power Company mailing stuffers are not a sufficient commuication tool - it might take newspaper, radio, tv and internet. There needs to be some incentive to take specific action. As much as I don't like the lotto or raffle mentality it might work to have one associated with those who send in pledge cards."

"allow a group of home owners to pool their money and buy a wind mill to provide power a number of houses in the neighborhood."

"The existing transmission infrastructure was not designed to support the open and competitive trading, access and regional/national transmission of power that it currently is being asked to support. Though it will be difficult for states to give up their statewide control of this transmission infrastructure, it is imperative that it be done, on either a regional or national basis so that new transmission lines can be installed, with the use of eminent domain, that will also provide the economic incentive to have this type of infrastructure "in your backyard". ie: A portion of the transaction cost for the energy going on these lines must be paid to those people who have to put up with the inconvenience of them being located in their area (either individually or compensation to the community, which would then provide the benefit to their constituents.) In addition, there has to be the economic incentive for the transmission owners to make the necessary upgrades. This, too, needs to be provided on a national/regional basis. The days of the local utility providing power and infrastructure just for themselves is over, and so should the archaic structure of the transmission system. Another contributing solution to the problem is the support of regional power plant development, which can help avoid the need to overtax the existing transmission system, by having the power where you need it."

"To reduce our electric dependency and vulnerability to accidents or terrorists, should Illinois set and implement the following priorities? 1) Conservation incentive programs to reduce our consumption of imported fuels, so we can export more power and further boost our economy. 2) Energy efficiency incentive programs, such as upfront financing for highly efficient equipment and appliances that can be collected back from the energy savings. 3) Decentralized combined heat and power incentive programs for businesses, industries, hospitals, and municipal governments to purchase small turbines or fuel cells. Locally sited small power plants would reduce our economic vulnerability to blackouts and provide additional power for export. Combined heat and power also improves efficiency, getting more productivity out of every dollar of fuel we import into Illinois. 4) Renewable incentive programs would decentralize power supply and reduce imports by producing local energy from wind, solar, geothermal, and biomass. Specifically, geothermal heat pumps hold tremendous potential to provide significant heating and cooling energy from our own land. Geothermal would reduce fuel imports and giving Illinois a leading role in profiting from this future energy market. Biomass is also well suited for producing local energy in our agricultural state. Wind, especially on Lake Michigan, could also help protect Chicago's economy. 5) Coal only has economic potential if we lead the world in manufacturing pollution control technology for NoX, SO2, Mercury and CO2. "

"ComEd has numerous problems with their maintenance on both their transmission and distribution systems. Mostly due to lack of employees and trained and qualified management people. even though the Company has recently developed a transmission group of employees that are dedicated to the work of maintenance of this system. the number of comed employees is insufficient so they rely on contractors to do this work which may or may not be available when needed. In regards to their SubStations they just reduced that workforce by 30 people. they offered a buyout and if 30 did not take it they would have layed off. there is currently some kind of an audit going on that was set by the ICC were an outside group (i believe it is the Liberty Group) is inspecting these stations.

the union was asked to supply stations that we thought should be inspected so we supplied these to this outside company. it should be interesting to see the results. on the distribution side. the numbers of employees that do this work continues to diminish these departments are the overhead and underground departments.the majority of these employees are in their late 40's and fifties and are eyeing retirement in the next 5 years . the company has cancelled all constuction schools to replace thes people. it normally talks 4 to 5 years of apprenticeship to replace these people. there is also a numerous rotten poles in the

system which are referred to as osmose rejects because the company that does the inspections on these poles is named osmose. there is a written report that we do not get all we see are tags on the poles showing that they are too rotten to climb, it could fall over, which does happen. the company to my knowledge has no program to change these poles out they just wait till they fall over in the next storm so they can write it off and that is a reason that there is so many customers out during storms. the overtime that all employees are forced to work is unbelievable a lot of people have worked 1300 to 1500 and more hours of overtime. and know the company has instituted a 50% call out response or you can be disciplined or discharged.

these hours of OT have been going on since 2000. in 2002 it dropped off a little to 500 to 1000 hours of OT and this year the average is probably already 500 hours. these hours show there insufficient employees to do the work and i believe may be putting them in jeopardy because of fatigue. management that runs these crews are no longer coming from the ranks and therefore they have no practice experiance on how this system works. this may seem to be a Union or labor complaint, but you must remember that electricity does not generate and distribute itself it takes trained and qualified men and women to make this happen and comed is not investing in them. even if they are investing in the infrastrucuter it will not make the lights come on with out the worker. i suggest when you investigate just do not talk to the Companies but go diectly to the Unions and the workers they represent to get the whole story."

"Think out of the box Try this start over with the engineering, planning and construction and maitenance of all 69kv 138kv 345kv and 765kv transmission busineses of all the companies doing electrical transmission busineses in Illinois using the deregulation law force Exelone and others to give up all claims to the transmission system and pay them off SAY 320 billion Why because they have a selfish interest their own and not the good of the country... Now the government owns all the transmission systems much like the government owns all the roads. Now the government goes out for bids to run, operate, and set rates to run the system to provide service with over site by the government. The government charges a fee for these rights to pay off debt. The government sets the ground rules to operate, rates and charge for use and construction and maitnace Every company pays in to a pool based on their useage. Each company can buy SERVICE or BUY more transmission lines from the government to be sure they have more service/capacity than they require which the government can do.

The government can provide additional interconnections, time of day rates and the ability to turn of the system if the company wants a special rate and can build additional facilities. No company is allowed to build any transmission lines. The government would plan, build, and maintain all transmission systems no argument just do it Our best chance to be sure we get competitive rates with sufficient service. What we have now is not working and if you think it is wait for the next BLACK OUT Yes I said black out It will happen again and again in your neighborhood. COMED calls these acts of god and walks away Call the edision one line and you to can get the walk around by a perfesional trained in the fine art telephone balony. If You don't do this do something but get the Exec's out. The Owners are the problem. The people that work for the company are only there to do what the Owners want them to do. The Owners set the culture and work rules. The Utility Transmission business with government oversight is the way. As the government will be the new Owners the voting population will have a say in how they are served and at what level they sare sev ..."

"This suggestion deals primarily with the apparent complete lack of funding in Illinois for Research & Development in the area of energy when proposed by an individual. The California Energy Commission (CEC) funds a (PIER) Public Interest Energy Reseach Program where they solicit applications for their (EISG) Energy Innovations Small Grant Program. This program is open to any individual from anywhere since any viable solutions will help their residents. CA is currently funding one Illinois resident. Visit the CEC website for more info. I have not been able to locate any entity within Illinois that funds energy related research that is to be done by individuals. I have contacted the Environmental Law & Policy Center and they could not identify a contact. I have spoken with many members of the Illinois Solar Energy Association and the Midwest Renewable Energy Association and they could not identify a contact. I spoke with ... of the ComEd program for the promotion of solar and wind energy in Illinois and he could not identify any department or person wihtin ComEd that could identify private research funding sources. The Illinois Clean Energy Community Foundation only funds non-profit and public entities and they could not identify a contact for funding. I have looked through the various Illinois government websites and could find nothing that applied to research funding for individual researchers. No obvious group that I could think to contact could provide and contact for funding within Illinois.

I applied to (DOE) Dept. of Energy (NREL) National Renewable Energy Laboratory (OIT) Office of Industrial Technology (I&I) Innovations & Inventions program in 1999. Their technical review rated my proposal very positively but their debriefing team told me that individuals would very rarely receive funding. They had a very limited budget that has since been cut. They had very specific guidelines for funding so only proposals that promised the greatest atmospheric carbon reductions would be considered. It could be the greatest idea that they had seen but it did not fit their immediate narrow guidelines.

The Northeastern U S had a power blackout in 1999, Texas had one in 2000, California had theirs in 2001, and the Northeast U S again in 2003. This was after \$ billions of investments in merchant peak power plant construction. All of these power failures occurred on the hottest days due to the peak power demand. The latest transmission line failure cascade was indirectly caused by peak demand. Neutralizing peak power demand for large (AC) air-conditioning loads would significantly aid the power generating capacity and transmission problems.

I am a graduate Mechanical Engineer and Registered Civil Engineer in IL & CA. I have over 30 years experience in heavy construction technology. ... built more large (TES) Thermal Energy Storage tanks than anyone (primarily in CA). This is the system used at McCormick Place convention center in Chicago to meet their large AC requirements and to take much of the required power off the peak demand time period. These systems are now only commercially viable for large facilities like an entire college campus or an airport that needs over 10,000 Ton-Hours per day.

I believe that I have a method that could make this Thermal Energy Storage system commercially viable for smaller systems like high schools, strip malls, and other businesses that only require 500 to 5,000 T-Hr/day. This might be every Wal-Mart, Target, Walgreens or government office in Illinois. This system could take wind and solar energy when generated and effectively store it for a day or week until AC capacity is needed. I can store renewable energy until needed. I cannot store it forever and not for every use, but I can shift it to peak power demand periods for AC use. The Federal government is the largest single user of AC across the USA and Illinois government offices are a major user in Illinois. What is the backup plan for the Federal government and Illinois government offices to provide AC during peak power demand periods? I believe that their isn't any backup plan!

No corporation will even discuss an unproven/untested technology. This is especially true if renewable energy is mentioned. There is no public funding in Illinois for an individual to test or prove a new development. Only non-profit, university, government research facilities, and corporations are presumed to be able to provide innovations or solutions. Letters to public office holders only illicit standard inarticulate staff responses. I would be willing to provide more detailed information or discuss this topic further with a representative of the Illinois Energy Infrastructure Task Force. I thank you for providing this convenient opportunity to provide possible solutions and suggestions. "

"The geographical highest point in every county should have built wind mills to harvest the wind for power."

"I recommend that the impending emergency center that will be funded under the Homeland Security Act include renewable energy systems to help power the facility, including maintaining battery and other energy storage systems. My company just installed such a system at Chicago's 911 Center - a PV system that normally supplies power to the building, but in an emergency will power batteries that keep the lighting on in the briefing room. Low speed wind turbines can be used as well as photovoltaics. This should be a requirement for all buildings that serve some form of emergency capacity. Besides providing a pollution free form of energy, this will encourage renewables to be used more in the mainstream. Don't forget, one of the largest causes of death from Hurricane Isabel was from carbon monoxide poisoning from improperly sited and operating backup power generators."

"It would seem to me that a wise course to follow concerning energy management would be to educate consumers concerning the variable costs of electricity that are applicable during different hours of the day. I am very fortunate to have been included in the initial group of consumers who participate in the ESPP power program. In my opinion it is a really fantastic program that uses available technology to review and thus manage power usage and receive the results of those efforts in a very timely basis. When one is aware of the actual cost of providing power on an hourly basis, it is a huge incentive to manage power usage during the peak hours. Having the tools to do this, such as the Internet, has made my family much more aware of power usage and costs than ever before. When everyone pays the same rate throughout the day, there is neither the incentive to save other than the vague "cut down on using appliances that use a lot of electricity", nor the knowledge of how individual actions effect the bottom line - the actual amount of power use and its cost. Truly, "knowledge is power", and in this case it is a most applicable phrase!"

"I am employed by ComEd. Myself and fellow workers are not first responders in a black out emergency our job is to support those that do. This severely limits ComED's effort to restore power on such a massive scale as was seen on the east coast and in Canada. The training of employees and having the employees to train must be a key point in any long term plan to reduce the risk of a major blackout."

"We would suggest informing the citizens of Illinois how to be prepared in case a massive blackout does occur. This would include easily understood tips and suggestions for family readiness. Families should be encouraged to create a disaster supplies kit. For more information on what families can do to prepare for a blackout, they may visit the American Red Cross website section on blackouts at <http://www.redcross.org/services/disaster/> They will find both an English and Spanish version available."

"commonwealth edison does only minor upkeep and maintainance of their right of ways as a employee and electrical worker i am continuedly battling the management of our company too keep these right of ways clean up and accessible .the reason for this is that it enables us to perform proper maintainance and inspection of high voltage transmission towers,it also is and eyesore and it becomes a danger to workers trying to perform their duties not only durning daylight hours but also durning night when and emergent situations arise.their seems to be no,or little concern for preparation of these right of ways when work is scheduled,in the event of a major power outage my fellows works will be slowed and put in harms way as we try to move men and equipment into affected areas. it is my belief that commonwealth,exelon will never willingly perform this neccessary work .if you are truly interested in avoiding what happen on aug 14 then perhaps your commitee will look into the way comed! ,exelon maintains these right of ways . thank you"

"... How old is your distribution/transmission system? I became an employee of comed in ... at that time they were upgrading their system to meet an overloaded and antiquated condition. Many of the improvements that were made to the underground system (new urd cable) that was installed had a life expectancy of 18 years. Gentleman that wire is what is still operating in the ground where it can not be seen, we have continually patched it and repaired it beyond belief. Many of us older workers have repeatedly informed the company about this antiquated and dangerous wire they have in their system only to be rebuffed by answers like we are running the company don't worry about it. on top of the antiquated wire, Comed will lose almost 40% of its workforce in the next 3 years, and they are not trying to add or train anyone to do the work. We are so short handed in the workforce that many workers have to this day over 1300 overtime hours on top of their regular work day, then on the 4th of July ... sent us a letter telling us that if we don't respond to callouts 50% of the time on any given day and 100% during a storm, then we will be subject to time off without pay or termination, ...Someone should ask him what are his intentions of a viable workforce to put the lights back on when they do go out. We are constantly adding more and more management positions while laying off the people that help us to do our jobs safely and efficiently. in their new exelon way they have a manager of POWER TOOLS, what a waste! but they will not hire, promote, train or admit that we need to expand our workforce. in the area where i work we had in 1996 50 lineman to maintain our system we now have 16, and our area is steady growing with the addition of new subdivisions and possibly a new airport, what will we do then, it takes 5 years to train a person to do the work, we Thank You"

"comed has had a record seeing the same things happen over and over but not fixing the problem. yes my town is on a small scale but this applies any ways. main distribution lines that constantly get hit by lightning or trees should point out that matinance is needed yet they are slow to recognize this and when this can take out half the town(and who knows where else), this is a needless risk. comed fixed the problem after 4 years went by. point is that this is to simple of an idea-matinance p.s. i live under 10 miles from 3 electric plants including 2 nuke plants, its funny when the power go out that close to the source."

"Since peak demand is increasing much faster than base demand, it would make sense to price electricity accordingly - it should cost more per kilowatt hour to use electricity during peak demand hours and should cost less to use it during non-peak hours. People watch their pocketbooks and if they were aware that they could save money by shifting washing/dishwashing chores to evening hours and/or turning up their a/c 2-3 degrees during the summer afternoon and/or more options of natural lighting, they would switch their use and demand to help even out the system. Providing hourly market prices, as The Community Energy Cooperative does with their new meters, would reduce congestion on the transmission lines and save consumers money. If this were implemented now (with only a meter change and educational brochures required to get started), we could then work on more long solutions, such as renewable energy and smaller, more local generation."

"I have worked for Com Ed for ... years and this company continually struggles with maintenance. They do not want to spend the money on upgrades unless they absolutely have to. Many times we ask for parts and material and are told there is no money. Just recently we had a transformer leaking oil due to the radiators rusting away. They were beyond repair. The Co. suggestion was to just shut the leaking radiator off. This reduces the cooling capacity of the transformer and reduces the output of the transformer.. Our system is nowhere near reliable contrary to what the Co says. There are so many more instances I could write another hour or so. Ask any employee with time in the substation dept. and they will tell you the same thing. With no money for repairs how in the world can we purchase another power Co.? About 2 years ago the Co. hired people off the street for management positions. Almost all have no utility experience. How can this be a good move for reliable service.

My boss knows nothing of my job. He's useless to me but the Co feels this a good move. Unbelievable! We used to promote from within. Then your foreman knew the system and how to problem solve. Now the foreman know nothing and have to call someone with knowledge for help. Its a joke. We hire no new people for future employees in our groups. The company just wants to downsize. This is reliable service? We contract out half our work to outside contractors out of state. What do they care about IL? All of us here have pride in our work and want to pass our knowledge on to someone who will be with the co. in the future but there is no one to pass it on to. This co. will be a contract before long. Good luck on the call out response when your calling out of state in the middle of the night. This Co. has no plans for the future except to make money. My whole thought on this is where are we heading for reliability with no new people and foreman who are lost at what there doing? Sincerely, Local 15 Com Ed Employee"

"I have worked with Comed for almost ... years. In that time I have seen comed go from a company that took care of their employees to a company that screws their employees, let me explain. Ten years ago the company employed over 60 lineman and 40 crew leaders in Mt.Prospects area alone. Overtime averaged 300-600 hrs a year, now there are 30 lineman and 28 crew leaders with an average of 800-1100 hrs of overtime. The area of coverage has not changed, the number of people we serve has gone up yet Comed has reduced the workforce through attrition (VSP,layoffs,etc.) those of us left are worked that much harder. Unfortunately I am one of those people.

While Comed stock rises, us on the front lines are left struggling with half the manpower this company once employed. I don't think I need to tell you how fast and how much Illinois has grown recently. Yet, Comed has half the base workforce(lineman, splicers, substation const.) it had 10 yrs. ago. Comed refuses to admit they have a shortage of workers in the field, but continue to snow the public and the media alike. If you would like more examples feel free to e-mail me. signed, a concerned lineman"

"It seems to me that the proposed ideas I have seen will take too long and be too expensive to implement. Most of those ideas talk about re-construction and re-linking of existing grids. I propose that we set up local grids backed by locally held "spot demand" power plants, some natural gas fired and other smaller units being diesel powered. For example, hospital plants probably would be diesel so as to render them totally beyond interruption due to destruction of natural gas pipelines. The State should make certain that each hospital has the necessary generators big enough to not only back-up emergency and operating rooms (which mostly are backed up now) but larger plants capable of operating at least a few elevators and, say, every eighth hallway light now installed and at least one wall receptacle and one small ceiling light in each room to say nothing of the hospital-wide oxygen distribution systems. The hospital kitchens should be fully powered but their dining rooms offer only minimal lights/power.

The State could pay for these right-now by issuing a State bond directly in payment for such equipment to it's manufacturer and to the installation contractors; such purchase bonds would be tax exempt and carry interest coupons large enough to assure that they could be sold to banks (etc) at par. Each hi-rise office or apartment building above 4-floors should have enough power units to operate a minimum number of elevators, it's command and control communications system and at least one in every 12 hall-way lights (etc)"

"I am currently a member of the COMED and Chicago Community Energy Cooperative's ESPP program. I not only enjoy cheaper power bills, but also do my part to shift as much energy consumption as I can manage to the evening hours, thereby enjoying more savings and decreasing the peak load on the grid. Currently, a web page posting is used to communicate the next day's pricing. If prices exceed a certain threshold, an email alert or voice message is left for the ESPP participant. I think this method of price motivation is fantastic to decrease peak demand, but the communication methods are cumbersome. The ESPP program as it stands now should show a decreased peak demand on problem days for participants. However, I personally would be more efficient in my power usage if a way to check the pricing was easier. I would suggest a device that might look like a caller ID box, but it would display current and projected energy costs as transmitted from the power company. This device could connect into the grid to receive a signal broadcast from the power company and display current and near-future pricing, as well as have an 'alert' function for high price (peak demand) days to alert consumers to turn down their air conditioning, and pull the shades.

Already the technology exists to transmit high-speed data over power lines, so a simple table of times & prices should be easy to transmit & receive! It would even be a simple matter to create thermostats with intelligence to shape power consumption to avoid high prices. I also believe that paying market rates for electricity will foster awareness of energy issues, as well as drive innovative ways to save electricity when power is expensive. I personally have concentrated new efforts on making my house more energy efficient as now energy consumption is something that is 'on my mind'. I hope my opinion on this matter helps Illinois lead the way in intelligent power management. I am a computer network design consultant and many of the same basic concepts are shared between the power transmission network and the data transmission networks that I am familiar with. Thanks!"

"1. Create a rate structure that will promote conservation. Make it finically beneficial to use less. Under today's structure the more you use the cheaper the rate becomes. If businesses and home owners are charged a higher rate as their energy use increases there will be financial incentive to use less.

2. Provide tax incentives to Ill residents. Make purchasing solar or wind or other renewable energy more reasonable by offering tax credits/incentives. If installing wind or solar the initial cost is high. Incentives will make it more affordable by subsidizing the initial cost."

"... I am obviously exposed to almost every part of the utilities infrastructure: substations; transmission lines; distribution lines, down to the services to individual homes and businesses; customer calls for isolated outages or voltage problems; responding to police/fire emergencies; even street lights that are out. Ever since the talk of deregulation started, ComEd has been changing the way it does business, some of these changes have been overdue, and are good for the customers. However, reductions in the workforce are not good for the customers, the system, and the employee's. Back in the late 80's and early 90's, to have 200 or 300 hours overtime due to storms and possibly some planned jobs was common, but in the last 10 years our O.T. has steadily increased until now over 1,000 and even up to 2,000 hours per year is the norm! It is very hard on our family life and it is obvious the company does not care, there was a Work/Life balance initiative which never impacted anyone I know at the company, but we are just responsible for day to day operations not corporate level decisions. In an industry as dangerous as ours, these excessive hours have caused problems with safety! I believe we have had 10 fatalities in the last 8 years! We operate a system that is below the standards of twenty years ago, and when we are dispatched to trouble calls, be it!"

"Even though ComEd/Exelon Corporation hasn't laid off any employees at this time. They do intend to lay off starting January 2004 after the legislation has passed. They are offering VSP's but not replacing those workers. They are downsizing departments and forcing additional work on the remain employees. Hiring inexperienced managers and contracted workers, from non-related companies. These people have no clue as to the policies and procedures of this Company and frequently side step the ICC guidelines. They are no longer operating in the interest of the people and aren't customer friendly any longer. They inform their workers that this is a corporation now and all of the old ways are out. They stress out the once loyal employees who use to hold the companies ideas with high regard but no longer can go along with the new ideas.

They purchase computer systems that they know don't work effectively for the business and instead of dumping the system when it was first purchased they spend more money in overtime trying to make the employees make it work and it still doesn't. They repeatedly place the cart before the horse. They never seem to listen to the employees, who know the best thing for the system or systems they work with everyday. Instead they hire managers, who have no concept about how a utility business of this magnitude works or the policies but they are in charge of critical work areas demanding that workers in many areas proceed to work in unsafe manners. Crying broke but spending wastefully"

"Stelle has 12 homes with PV (solar electricity) and small battery back-up which effectively prevents black outs. Our phone company and water plant also have solar and wind with battery back-up...again, mitigating all short term (<3 day) blackouts. We encourage the use of renewables with sealed AGM batteries and a bi-directional inverter to literally prevent blackouts and protect electronic equipment from brown outs and bad power typical in a rural setting. Systems range from under \$4,000 to over \$60,000, retail. My personal system was made possible by the then DCCA PV rebate (I was first in the state) and although it did not cover batteries, I feel a solar system without batteries is a serious waste of money. Note: hundreds of solar systems sat idle during this summer's blackout as they were "grid tied only". Perhaps revamping the DCEO PV and Wind grants and rebates to allow for battery back-up should be prioritized."

"Deregulation has been the main cause for the increased unreliability of the Nation's power grid. Utilities are under enormous pressure to stay "competitive" on their rate structure and still deliver a fair return to their investors. In this race to the bottom on rates, infrastructure and manpower are neglected; while concurrently, electrical demand continues to grow. We, as a nation, are just beginning to see the effects of these past few years of operating this way. I fully expect the problems to escalate geometrically if regulatory changes are not implemented soon. State commerce commissions must make the tough decisions and allow rate structures which encourage Utilities to upgrade their transmission and distribution systems and to pay for new generating facilities (with all the necessary environmental controls) which will replace aging and inefficient units currently in use. Utilities that have cut manpower so that electrical outages are above the industry average should be fined and required to employ enough people to maintain an acceptable outage repair time. Consumers are being misled with the idea that deregulation leads to more competition and lower rates. There is no such thing as a "free lunch."

"The state should insist that all new school buildings use solar and other energy efficient ideas, this could be tied to state funds. Since Oswego is rapidly growing, having built 5 schools in the last 5 years and possibly 7 more, I can see where solar and other energy efficient items could reduce our dependence on fossil fuels and save taxpayers money. I have seen articles on schools that have used solar, we just need to find architects that will be open to the idea."

"Monitor com ed's union situation.Exelon has spent hundreds of thousands of rate payer dollars trying to bust IBEW Local 15.Since the "merger of equals " exelon has retained "The Burke Group" a de-unionizing organization. The union currently has 376 federal arbitrations pending.1500 + and counting and 1700 + grievances last year. Instead of replacing their ancient infrastructure their main goal is to get rid of their union workers and replace them with contractors. These dollars would be better spent on training employees and supplying them with the proper equipment to patch up their old outdated transformer and substation system. If you would check the records you would find that fatalities and accidents committed by contractors is far greater by ratio than the loyal long time com ed employee. If there is a greater recipe for disaster than to have contractors with free access to com ed sites I don't know what it is.

Many many times you will find com ed employees outnumbered Many different contractors who can easily be employing transient less skilled and suspect persons. What easier way for dangerous or terrorist type individuals to infiltrate our electrical system than to contract out to a company that is so blinded by greed that they don't see the obvious dangers they are exposing workers and consumers alike.We are looked at as the outsiders when we enter company property. The executives are getting regulated dollars and want to use least skilled and dedicated workers when the people of Illinois are going to be shortchanged by these plans. The exec's have opened the door for danger by allowing thousands of contractors complete access to all com ed facilities."

"The Edison system dates back to the turn of the Century and they have had the policy and continues today to fix and repair as needed or in emergencies or is the least cost fix at this time. They tell you they have spent 2 billion dollars in improvements. The question s are as follows; 1. How much money was spent on overtime. 2. How much money was spent to be sure the work being done was inspected and done properly the first time . 3. How much work was done based on political Iknow what they want and we will do that. Work is not based on need or planning contingencies. If planning is involved are the plans to robust with so many what if's it makes it impossible to do economical fixes in a timely way. 4. How much money was spent doing things twice because the engineering was

flawed our equipment was spec'd wrong. 5. How much money was spent to upgrade but actually is less reliable than the original installation. 6. How much thought went into is the fix the right fix or should we wait until we have a better picture or do we fix to look good. 7. How much thought went into is a fix required or needed or can we substitute for something else 8. How much do we fix if it is just old but capable of continuing service. When is old no good are we spending money to meet perception or a real need. 9. What criteria is used to determine if transmission line shall be upgraded using steel poles or Towers or going under ground. it appears that looking at what edison has put up is steel poles a costly alternative to towers and no thought given to underground because listen to them tell it underground is 8 times more than overhead. I believe in today's world pricing is coming down and all alternatives should be looked at. The cost of doing business is measured by how well it is engineered ,bid and constructed to spec's. Therefore does edison Audit each and every job to be sure they are getting their monies worth and also are they learning from past mistakes. I don't think so. 10 Planning What planning is there at least a couple alternatives to each job no matter how small. Are the planning people experienced in the field of transmitting energy or do they use civil engineers to do electrical work and heating engineer to do distribution work and so on. is the work force qualified to scope schedule and prepare a meaningful budget. we should look into this . Poor planning leads to spending a hugh amount of money with little return. 11. are the jobs manned properly to be sure the work is being done in the most efficient way. Not working in the rain because of union rules is an age old copout by management they signed the contract and they can unsign it

These are some area's to start in. If they can clean up their act and actually perform 2 billion dollars worth of work the blackout problems will improve but a policy change must come about because another 2 billion dollars can be spent and get us no where. Money is not the answer a policy of share holder involvement in the process of transmitting, generating and distributing electricity must come about or billions of dollars can be spent with little benefits. By share holder involvement the productivity of the work force both management and labor must be measured and determined on a routine basis and not just another program. Work rules changed, work behavior has to change. work responsibilities need to change, the work it self needs to be streamlined, customers should be invited to the share holder meeting to gain there support in production of electricity all these and other items must be shared with all of the stake holders and analysis made of what is in the future using the new changes. Our progress shall be monitored for results and the process improved to gain total acceptance. For example suppose the exelone was planning a transmission line and they actually held a meeting for all to come and share their thoughts"

"Please check the accuracy of the information you are being given by ComEd. Force them to give you written documentation and double check this information with the local 15 union leaders. The number of employees actually improving the system are dropping and ComEd is not correcting the problem. Employees are being forced to work great deals of overtime, often to the amounts equal to having two full-time jobs. Please check the amount of money the top officials are being paid and their bonuses for the previous year. Comed costumers are the ones losing here. The local 15 leadership will be happy to provide you with any paperwork needed. PLEASE DON'T LET THIS TURN INTO ANOTHER ENRON SCANDEL! I HAVE TO WORK HERE 20 MORE YEARS. MY WIFE AND KIDS DEPEND ON IT!"

"... First, about me, I've worked for Commonwealth Edison for ... yrs. I have seen many changes through my career none as unsettling as the latest regime. I have never seen morale as low as it is today, it used to be commonplace to see a problem on the system while driving to a job, pull over and fix it, now I drive by, I can not take a chance of something going "wrong" during repairs and in turn getting disciplined, which this regime loves to do. The company will stand by a decision until something happens then turn on us. This process they call "Exelon Way" is only a tool to pressure employees into either quitting or to get the goods for termination. I am a human, will I make a mistake? Most definitely, and ComEd will be there to discipline. To the age situation, the average age in the overhead is 40 yrs. They, contrary to what they told you have no line schools scheduled. When I started I was told it takes 5 yrs to develop a lineman to a basic level, we are losing time. No one from the bargaining unit will go into management for good reason, so we now have foremen from such places as, gas companies and the military, by no fault of their own they don't know my work. So now I have a foreman who is my supervisor that has no idea what I do, not to mention how I do it. *** is at the top of my dept, even he doesn't know about overhead work, he has a substation background. Is that important? HELL YES, he is the one making rules to live and work by that may work in a substation but not in the overhead. Believe me, this companies goal is to make money not keep the lights on. What happened out east will happen here in time. I'm sure you can feel my frustration, I'm not alone. Please help us if you can. Thank you for this opportunity!"

"Exelon in particular needs to rehire employees that they have let go in "downsizing"...this is not just sour grapes because my friends have been let go. We are falling farther behind in material condition to the point we can't catch back up. Everything is done with the short term in mind They (Exelon) are not putting money back into the equipment to ensure more stable plant operations...it comes down to earnings per share. Deregulation has been good for me personally with pay raises etc. but it is bad for Illinois for sure...I sure wish someone could help."

"I could go on for hours with examples of equipment in need of repair and or replacement. The most recent prompted this e mail, It involved a damaged 34 thousand volt circuit that crossed over ill.rt. 88, the wind had blown the conductor into a state owned street light pole. It burned up the conductor and the street light and also the street light control box. After discovering the damage my recommendation was to deenergize the circuit so a repair could be made. A foreman with minimal experience told me he was referring it to the engineering dept. Mind you this circuit could have been switched off with out interruption to a single customer. To top it off I was discussing it with a coworker and he told me he had been at the same location last year. To this day the repair has not been made, I'm told it is in the schedule ? Every year for the last 3 or so the workforce is told our budget has been dramatically reduced so I guess I should not be puzzled as to why problems are not fixed in a timely manner or not at all!"

"Power grids are vast systems. Stretching thousands of miles, and so complex that solar flares affect them. Not one single person can fathom what is happening to such an enormous system at any given moment. The recent blackout shows that computerized controls even have a hard time keeping up. Any system so large and complex will experience "trouble" on a daily basis. Redundant features and failsafes can overcome human error and mechanical malfunction. Can all failures be anticipated? NO! Several small, seemingly unrelated "weak links" can impact one on another and the system breaks, sometimes with disastrous results. At some stage in this chain reaction, the failure can be averted and the chain broken. Well trained, competent employees, good communication, and proper maintenance of controls and equipment can and do accomplish this feat. Not one, but many causes bring on disaster. System failures are brought about by multiple fractures and mistakes. Combining poor maintenance, bad communication, and shortcuts in staffing and training are a sure-fire way to ensure catastrophe! Over time the strain on the system, and those whose responsibility it is to keep it working, builds to an overwhelming level! To examine the electric transmission and distribution industry in general, and Exelon Corp. in particular, since deregulation, shows that we are on the wrong path. One that will certainly

lead to "system fractures". Think of Enron, the California power problems of a few years ago, the recent "Blackout", and the thousands of smaller outages unrelated to storms that occur every year. Business managers, not concerned engineers, are running and ruining this industry. ... Because of a money-first attitude pervasive amongst the very managers whose ethical and moral obligations should be otherwise, this company and industry will continue to deceive all that question their long term vision of deregulation. When the power goes out across Chicago, when the system melts in downtown Evanston, and the lights keep flickering in Joliet, Plainfield, and New Lennox, is that when notice will be taken. I hope and pray that it will not take a serious accident or fatality to alarm us enough to demand accountability. Will it take a dead firefighter because no utility employee was available to shut off the power, or if a wire comes down on a school bus full of innocent children and the response time is slow, is that what it will take? Do we need to experience a "blackout" of our own? What has deregulation done for the average customer? Please wake up before it's too late!"

"While the business of a power company is to produce power, it seems as though under deregulation, the primary responsibility is to the shareholder vice the public safety. That might be fine for a fossil plant, but Northern Illinois is dotted with nuclear facilities. It seems as though the bottom line skews the focus away from public safety towards private pockets. Money that should be invested in the infrastructure to maintain nuclear safety is instead routed away from the budget for ECCS equipment to maintain the corporate bottom line. This results in conditions whereas the budget will not allow for maintenance on, say, the Low Pressure Coolant Injection pumps (LPCI). In order to remain competitive, nuclear operators are looking for EVERY way to cut costs, and in my opinion, even in some places where cost cutting can only hinder the safe operation of a nuclear power plant. I understand the need to remain competitively viable, but certainly not at the expense of safety. I propose an elimination of deregulation. By doing so, companies will not be able to sacrifice safety for profits."

"First off, I applaud your efforts and wish more states would become this proactive in working toward mitigating the possibility of future blackouts. My suggestion is actually quite simple. I would suggest that members of your committee review the Final "UVM" Report that was issued by FERC on March 2nd. It can be downloaded at the FERC website. While I am certain that you are looking at the Final Report issued earlier this week by the Task Force, I would highly recommend you also review the report specifically dealing with vegetation management issues (trees and power lines). In addition to being the basis for much of what is in the Final Task Force Report regarding UVM, the Final UVM report contains a great deal of supplemental information and recommendations for mitigating the risk of future blackouts. Feel free to give me a call. Thanks for your time and the offer to submit suggestions"

"As you know ComEd (Exelon) had a record year last year as far as profits. While I don't have a problem with that, I do have a problem with how they achieved their record year. They have spread the workforce so thin, and have not done near as much maintenance as they should have, or will. The company I work for is a beast that cares little for the consumer and less for their employees. I recently was sent to Joliet to help with the tornado damaged town. The damage was amazing. I was told I could not go to sleep after being awake for over 30 hours. This is neither safe for me, the public or my coworkers. Plus they would not allow us a sit down meal. While this may not address the blackout solution directly, I do feel it is related. The company loves when storms hit. They work us long and hard with little regard for the public, us and our families. When a storm hits, it wipes out old ratty poles, wire and other problems that the company would normally ignore. If you were to drive down an alley (damn near anywhere) you would see a red tag 1" by 1" on several poles. That tag signifies a rotten, unsafe pole. Now, the company doesn't want "Joe Public" to know that, because I know I wouldn't want my family and friends to be near that. And I'm in the industry. Take what I've said to heart and the next time a pole looks rotten look for a red tag. "

"You are being lied to. The streets are under staffed due to the company cutting back. They are not filling vacant shifts because they are trying to save money. I guess the profit they turn quarterly isn't enough. Also, front line supervisors have no experience and they are puppets. emergency response time will be longer. please don't listen to there garbage."

"Someone should talk to new building contractors/developers in Chicago. They seem to be having a problem with ComEd moving the electrical wires so that construction workers can safely build. ComEd takes so long that the buildings are put up close to live electrical wires which are carrying 4,000 or 12,000 volts. This is a danger to the construction workers and subsequent residents. A contact could cause an outage and more importantly a injury or death. This seems to be a worsening problem on Chicago's north side. The other problem is extremely long waits for new electric service connection by ComEd. Weeks are stretching into months while the building is completed but the service has not been connected. Thank you."

"I am a current employee of ComEd. For the last 4-5 years you can see a gradual but steady of lack of preventative maintenance. The Breaker Maint. Program has been all but scratched from the regular work that they did each year to make sure that the breakers will operate the way they should year to year (4,000 volt breakers to 345,000 volt breakers). The new way of doing things is to take an oil sample on oil breakers on a regular schedule, but the rest of the breakers nothing is done at least for the past several years. These once were taken out of service each year and the relays would be checked and the breaker if possible would be tore down and gone over with a fine tooth comb, and put back in service. That is not done any more because the engineers of the company now see's it fit not to. The biggest reason is that there are not enough construction personnel to do so. Are constantly having equipment blow up and then they repair it. In Dixon there is a station TSS 107 that was built in the 1940's most of the equipment is dated to that era.

Last year 2003 we lost 1/2 of the station 3 plus times for the same piece of equipment the 138kv regulator. It also sat for at least 4 months of the year out of service waiting for parts to be made. If they lost the only other Transformer they would have been in real trouble. To top that off the transformer that stayed in service has alarm points disconnected because the wires went bad and to this day they are still disconnected. Last week we were all pulled in the office for a meeting and was told a very scary thing. The company according to my direct supervisor was told that there is NO SPARE POWER TRANSFORMER ON THE SYSTEM. Not a one. So we have been given a 5 page inspection sheet to go over each and every transformer that is in service and sign off that it is OK. This is to blame someone if it fails and to fire more people and work with less"

Appendix 3: Questions and Answers Addressed by the Illinois Special Task Force

Renewed Focus on Traditional Reliability

	1	2	3	4	5	6	7	8	9	10	11	12
Is the Illinois infrastructure protected from catastrophic power failure?	√	√	√	√	√	√	√	√	√	√	√	√
What are the testing procedures used by Illinois utilities to monitor and maintain reliability and safety of the energy infrastructure?			√	√	√	√	√	√	√		√	
What level of modernization is necessary to protect consumers from a widespread outage?				√	√				√	√		

Recommendations

1. Mandating minimum distance requirements between power lines and trees and other vegetation.
2. Establish vegetation management standards and benchmarks.
3. Require utilities to file a report each year outlining their plans for controlling vegetation.
4. Review and annually update industry-wide reliability standards.
5. Review utility company policies to ensure compliance with the new reliability standards.
6. Conduct annual reviews of the utility company compliance with the standards and link compliance to a financial incentive.
7. Develop service standards for the electric utilities.
8. Review utilities' performance annually in meeting service standards.
9. Ensure compliance with North American Electric Reliability Council standards.
10. Ensure utilities use appropriate management and information technology support tools.
11. Create an oversight committee to monitor the coordination activities between Regional Transmission Organizations (PJM and MISO).
12. Investigate the feasibility of creating a statewide Independent Transmission Company (ITC).

New Initiatives to Promote Reliability

	13	14	15	16	17	18	19	20
Are Illinois utilities taking appropriate steps to reduce electric demand during warm weather?				√	√	√	√	√
What can Illinois do to promote the use of energy efficiency and renewable energy to relieve pressure on the electric grid?			√	√	√	√	√	√
What are the ingredients for a safe, reliable comprehensive energy plan for Illinois for the 21 st century?	√	√	√	√	√	√	√	√

Recommendations

13. Develop uniform standards governing connection of distributed generation to the grid.
14. Establish rates that recognize benefits associated with distributed generation.
15. Facilitate increased investment in environmentally sound energy sources by enacting a renewables portfolio standard.
16. Raise Illinois' investment in energy efficiency programs to at least the national average to help make homes, small businesses and small industrial plants more energy efficient.
17. Empower customers to make their own energy usage choices by giving them real-time pricing information.
18. Enact energy efficiency standards for all residential buildings.
19. Enact energy efficiency standards for each of the products contained in the Federal Energy Policy Act of 2003.
20. Develop a statewide master energy plan.

System Safety and Security

	21	22	23	24	25	26	27	28	29	30	31	32
Does Illinois have adequate back-up generating capacity for emergency and critical law enforcement facilities in the event of a widespread power outage?	√	√	√	√	√							
Do Illinois nuclear power plants have sufficient safeguards for public health and safety in the event of a cascading power outage?			√	√	√							
Does Illinois have sufficient safeguards for public health and safety in the event of a cascading power outage?			√			√	√	√	√	√	√	√

Recommendations

21. Apply relevant findings from the bi-national *Outage Task Force Report* to the operation of nuclear facilities in Illinois.
22. Work with the Nuclear Regulatory Commission and utilities to ensure that nuclear power plants have the policies, procedures and equipment in place to withstand a massive outage.
23. Implement the appropriate findings from the bi-national *Outage Task Force Report* and the NERC Critical Infrastructure Protection Advisory Group to ensure that safeguards are in place to protect the integrity of both the generation and distribution systems.
24. Review background check programs for utility employees and contractors to ensure the programs properly correspond to the risk involved for the designated positions.
25. Reconfigure utility computer operating systems to remove remote access and prevent malicious cyber attack.
26. Review the state's critical response plan and prepare plans for a worse case scenario.
27. Ensure 24 hours of back-up power for all hospitals and nursing homes.
28. Ensure that all telecommunication systems have at least 24 hours of back-up power.
29. Enhance back-up power for 911 systems and evaluate their capacity to handle a substantial increase in calls during outages.
30. Implement the appropriate safety recommendations offered by parties affected by the August, 2003 blackout.
31. Disseminate information on how to respond to an emergency situation.
32. Develop the appropriate legislation to eliminate potential communication and information problems.

Appendix 4: Illinois Electric Utilities and Providers

Utility or Provider	Ownership	Customers	Utility or Provider	Ownership	Customers
Adams Electric Cooperative	Cooperative	7,736	Ladd Village of	Publicly Owned	642
Albany City of	Publicly Owned	441	M J M Electric Cooperative Inc	Cooperative	8,687
Allendale City of	Publicly Owned	256	Nicor Energy LLC	Energy Service	3,812
Altamont City of	Publicly Owned	1,351	Peoples Energy Services	Energy Service	1,102
Ameren CILCO	Investor Owned	203,338	Sempra Energy Solutions	Energy Service	4
Ameren CILCO	Energy Service	760	Marshall City of	Publicly Owned	2,450
Ameren CIPS	Investor Owned	323,552	Mascoutah City of	Publicly Owned	2,586
Ameren CIPS	Energy Service	421	McDonough Power Cooperative	Cooperative	4,853
Ameren Energy Marketing Co	Energy Service	20	McLeansboro City of	Publicly Owned	1,593
Ameren UE	Investor Owned	66,634	Menard Electric Cooperative	Cooperative	9,968
Batavia City of	Publicly Owned	9,985	Metropolis City of	Publicly Owned	3,707
Bethany Village of	Publicly Owned	700	MidAmerican Energy Co	Investor Owned	83,521
Breese City of	Publicly Owned	2,010	Monroe County Elec Coop, Inc	Cooperative	6,238
Bushnell City of	Publicly Owned	1,789	Mt Carmel Public Utility Co	Investor Owned	5,587
Cairo Public Utility Company	Publicly Owned	1,862	Naperville City of	Publicly Owned	52,825
Carlyle City of	Publicly Owned	1,757	Newton City of	Publicly Owned	1,785
Carmi City of	Publicly Owned	3,445	Norris Electric Cooperative	Cooperative	18,327
Casey City of	Publicly Owned	1,909	Oglesby City of	Publicly Owned	1,913
Chatham Village of	Publicly Owned	3,638	Peru City of	Publicly Owned	5,285
Clay Electric Cooperative, Inc	Cooperative	3,119	Princeton City of	Publicly Owned	4,470
Clinton County Elec Coop, Inc	Cooperative	5,280	Rantoul Village of	Publicly Owned	6,287
Coles-Moultrie Electric Coop	Cooperative	8,974	Red Bud City of	Publicly Owned	1,908
Commonwealth Edison Co	Investor Owned	3,587,254	Riverton Village of	Publicly Owned	1,608
Constellation NewEnergy	Energy Service	1,146	Rochelle Municipal Utilities	Publicly Owned	6,650
Corn Belt Energy Corporation	Cooperative	27,542	Rock County Electric Coop Assn	Cooperative	87
Dynergy	Energy Service	11	Rock Falls City of	Publicly Owned	5,155
Eastern Illinois Elec Coop	Cooperative	13,313	Roodhouse City of	Publicly Owned	1,156
Edgar Electric Co-op, Assn	Cooperative	5,245	Rural Electric Conven Coop	Cooperative	5,503
Edgar Electric Co-op, Assn.	Energy Service	82	Scenic Rivers Energy Coop	Cooperative	14
Egyptian Electric Coop Assn	Cooperative	13,748	Shelby Electric Coop, Inc	Cooperative	9,316
Exelon Energy Company	Energy Service	3,297	South Beloit Wtr Gas & Elec Co	Investor Owned	8,301
Fairfield City of	Publicly Owned	3,255	Southeastern IL Elec Coop, Inc	Cooperative	22,171
Farmer City City of	Publicly Owned	1,168	Southern Illinois Elec Coop	Cooperative	11,505
Farmers Mutual Electric Co	Cooperative	1,419	Southwestern Electric Coop Inc	Cooperative	18,614
Flora City of	Publicly Owned	2,996	Spoon River Electric Coop, Inc	Cooperative	4,572
Freeburg Village of	Publicly Owned	1,629	Springfield City of	Publicly Owned	67,722
Geneseo City of	Publicly Owned	3,543	St Charles City of	Publicly Owned	14,082
Geneva City of	Publicly Owned	9,425	Sullivan City of	Publicly Owned	2,579
Greenup Village of	Publicly Owned	938	Tri-County Electric Coop, Inc	Cooperative	15,000
Highland City of	Publicly Owned	5,567	Waterloo City of	Publicly Owned	3,751
Illinois Power Co	Investor Owned	598,426	Wayne-White Counties Elec Coop	Cooperative	13,747
Interstate Power and Light Co	Investor Owned	12,009	Western Illinois Elec Coop	Cooperative	3,408
Jo-Carroll Energy Coop Inc	Cooperative	6,314	Winnetka Village of	Publicly Owned	5,040

Source: Energy Information Administration, U.S. Department of Energy

Appendix 5: History of Blackouts

The blackout on August 14, 2003 was the largest ever to hit North America, and probably the most significant in comparison to previous blackouts. Other recent United States blackouts:

November 9, 1965: Northeast Blackout

An overloaded relay switch near Toronto left 30 million people without power throughout New England, into Ontario and down to New York City. Outages lasted for up to 13 hours. As a result of this outage the North American Electric Reliability Council (NERC) was formed.⁶⁶ The design and operation of electric utility systems changed after this blackout, which was second only to the August, 2003 Blackout in scope.⁶⁷

July 13, 1977: New York City Blackout

A lightning bolt in Westchester County, New York, knocked out two transmission lines and triggered the separation of the Consolidated Edison (ConEd) system from neighboring systems. Since ConEd did not have sufficient internal generation to keep the system going, it collapsed. The blackout affected 9 million people in New York City and lasted up to 26 hours. Unlike the blackouts of 1965 and 2003, the 1977 blackout resulted in widespread looting and public chaos.

July, 1995: Chicago Heat Wave

More than 700 Chicagoans died during the worst heat wave in the city's history. With a searing 126-degree heat index on July 13, 1995, all records for electric usage fell and three transformers at Commonwealth Edison's Northwest Substation failed. Scattered outages affecting tens of thousands of customers lasted several days, compounding the tragedy. An Illinois Commerce Commission study reprimanded ComEd for systemic and acute problems.⁶⁸

July 2-3, 1996: West Coast Blackout

A 345 kV transmission line in Idaho sagged into a tree and tripped out, resulting in a disturbance that affected 2 million people in 13 U.S. states, 2 Canadian provinces, and one state in Mexico. The outages lasted anywhere from a few minutes to several hours.

August 10, 1996: West Coast Blackout

Prior to the disturbance, the transmission system from Canada to California was heavily loaded with north-south power transfers caused by high Southwest demand due to hot weather. On August 10, 1996 two lightly loaded transmission lines sagged into untrimmed trees and tripped out. A heavily loaded line also sagged into a tree and tripped out. The grid operators were not aware of the loss of the first two lines and did not perform new contingency analyses to adjust the system requirements. The outage affected over 7.5 million customers in the West and lasted anywhere from a few minutes to nine hours.⁶⁹

June 25, 1998: Ontario and U.S. North Central Blackout

A lightning bolt struck a 345-kV transmission line and tripped it out, followed by another lightning strike, which took out a second 345-kV line. This caused the remaining lines to overload and drop out of service. This cascading removal of lines from service continued until the entire northern MAPP region was separated from the grid and resulted in the eventual blackout of the Northwestern Ontario Hydro system. 152,000 people were impacted for up to 19 hours.⁷⁰

Summers of 1998 and 1999: Commonwealth Edison, Chicago Disturbances

In 1998 and 1999, ComEd customers experienced a series of repeated, forced interruptions in electric service in Chicago and other parts of ComEd's service territory. These events culminated in a major downtown Chicago service disruption on August 12, 1999 exposing significant shortcomings in ComEd's power delivery infrastructure, operations and business practices.

Summer of 1999: Northeast U.S. Outages and Non-outage Disturbances

During the month of July, 1999, load in the PJM (Pennsylvania, New Jersey and Maryland) system exceeded forecasted demand. During these record peak loads, steep voltage declines were experienced on the bulk transmission system. The weaknesses that caused the disturbances were in the distribution system, which was especially vulnerable to heat and power overloads. Emergency procedures were implemented to prevent voltage collapse. These disturbances left hundreds of thousands of people without electric service for up to 18 hours.⁷¹

August 14, 2003: Northeast Blackout

On a warm humid Friday afternoon with somewhat greater than normal transmission and generator outages, a series of events contributed to a cascading failure that impacted customers around the Great Lakes and in the northeastern United States. The disturbance affected nearly 50 million people in two Canadian provinces and eight U.S. states, shut down 100 power plants including 16 nuclear power plants, and closed 12 airports. Estimates of total cost in the United States range from \$4 to \$10 billion. Power was not restored for four days in some parts of the United States and parts of Ontario experienced rolling blackouts for more than a week before full power was restored.⁷²

⁶⁶ U.S.-Canada Power System Task Force, *Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*, April 2004, 104. See Appendix 9 for an additional discussion of NERC responsibilities

⁶⁷ *The Great Northeast Blackout of 1965*, <http://www.cmpco.com/about/system/blackout.html>

⁶⁸ Klinenberg, Eric, *A Social Autopsy of Disaster in Chicago: Heat Wave*, University of Chicago Press, 2002

⁶⁹ *Id* at p. 106.

⁷⁰ *Id* at p. 106.

⁷¹ "Equipment Flaws And Weaknesses Caused Blackout In Washington Heights/Inwood And Other Areas Last Summer", Press Release Office of New York State Attorney General Eliot Spitzer, March 9, 2000. http://www.oag.state.ny.us/press/2000/mar/mar09a_00.html

⁷² U.S.-Canada Power System Task Force, *Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*, April 2004

Appendix 6: Analysis of August, 2003 Blackout by Affected Parties

Federal Energy Regulatory Commission Review

In accordance with the Federal Energy Regulatory Commission's (FERC) reporting authority, on April 19, 2004, the FERC issued a Vegetation Management Reporting Order that is applicable to all transmission owners, operators and controllers, located in the lower 48 states. The order applies regardless of whether the owners, operators and controllers are subject to the FERC's jurisdiction as a public utility.

The FERC's mandated Vegetation Management Reports are limited to the following designated transmission facilities:

- Power lines of 230 kilovolts or higher as well as;
- Tie-line interconnection facilities between control areas or balancing authority areas (regardless of voltage rating), and
- "Critical" lines as previously designated by a regional reliability council.

The reports must be submitted by June 17, 2004, to FERC and also to the appropriate state regulatory commission, North American Electric Reliability Council, and the relevant reliability coordinators.

Michigan Review

The Michigan Public Service Commission (MPSC) initiated a study to investigate the impact the outage had on the State of Michigan. The report did not try to determine the cause of the blackout, but rather to identify what impact it had on the state, and what measures should be undertaken to mitigate the risk of a future occurrence.

The primary focus of the report was on the transmission grid. The MPSC is concerned that piece-meal regulation of the transmission grid has seriously compromised the reliability of the transmission grid. The MPSC specifically recommends:

- Congress provide the FERC with the authority and responsibility to develop mandatory reliability standards; to enforce those reliability standards; and to impose penalties for noncompliance.
- The FERC allow only one Regional Transmission Organization (RTO) to operate in the Midwest region. But, if it is decided that more than one RTO may exist, there must be mandatory, enforceable rules that address the seams issues.
- RTO's should take the lead in ensuring that there is adequate reactive power support on their systems.
- Control over the reliability coordination functions should be consolidated within an RTO. Currently the Midwest Independent System Operator (MISO) is highly decentralized with 23 independent transmission companies operating as their own control area operators.
- Control room staffing levels and training need to be carefully evaluated.
- Consideration should be given to building additional transmission in the region.

Following the release of the interim bi-national *Outage Task Force Report*, the MPSC ordered the state Investor Owned Utilities (IOUs) to file reports on their tree trimming practices.

Ohio Review

The Public Utilities Commission of Ohio (PUCO) ordered FirstEnergy to file a plan addressing the problems identified in the interim bi-national *Outage Task Force Report*, including upgrading control room computer hardware and software and improving the training of its control room operators.

FERC ordered FirstEnergy to fund an independent study of the transmission system in the Akron and Cleveland, Ohio area. FirstEnergy must hire an independent consultant and prepare a report for the FERC, PUCO, and MISO. At a financial analyst meeting in New York on December 3, 2003, FirstEnergy outlined its plans to enhance its transmission system.

- Enhance operating systems security by:
 - Establishing new dynamic operating security limits, including VAR reserve limits
 - Ensure operating limits maintain capacity reserves necessary to prevent external forces from compromising integrity of the system.
- Enhance operational controls and focus
 - Monitor certain system conditions outside FE
 - Upgrade energy management systems and tools
- Enhance process controls
 - Independent audits of program controls
 - Independent audits of process results

Canadian Review

Canada's Ministry of Natural Resources collaborated in producing both the interim and final bi-national *Outage Task Force Reports*. In addition, the Canadian Electricity Association (CEA) called for the development of mandatory reliability standards. The CEA supports the creation of an electric reliability organization that could operate on an international basis.

City of New York Review

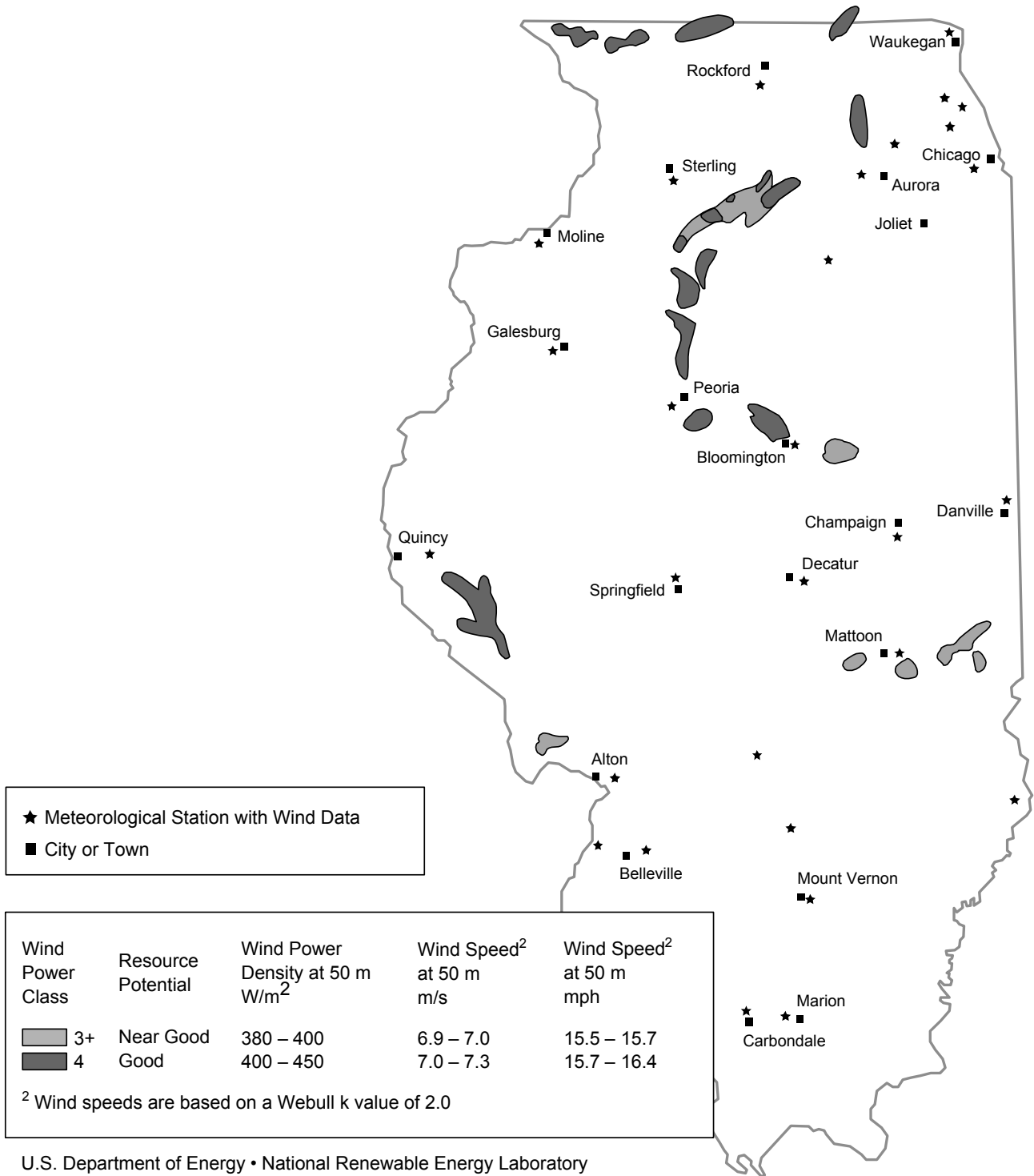
It is estimated that the blackout cost New York's economy as much as \$1 billion. Moreover, the outage was potentially a life-threatening event and in fact contributed directly to some deaths. The New York City Emergency Response Task Force's report "Enhancing New York City's Emergency Preparedness" was released in October 2003. Key issues from the report include:

- Emergency Response
 - Since September 11, 2001, agencies had invested heavily in cellular technology but the cellular technology did not perform optimally during the outage.
- Business Continuity
 - Many city offices and private sector establishments did not have sufficient back-up power in place, including neighborhood fire stations and certain areas of hospitals.
 - Some agencies and businesses did not have a store of critical supplies, such as fuel, water, batteries and flashlights, nor cash on hand to purchase these supplies.
 - Businesses made decisions based on the latest broadcast news reports, which were often delayed and lacking in important details.
- City as Employer
 - Existing evacuation plans often were not appropriately drilled or even shared with employees. Some public address systems did not work due to the absence of back-up batteries or a generator. In some buildings, battery-powered emergency stairwell lighting failed after a relatively short period of continuous use.
- Communications
 - There was a reduction in cellular capacity, as well as an inability of the public to have inbound and outbound phone service, which included the ability to call 911.
 - Cellular service in New York City was unavailable immediately following the outage due to overloaded use.
 - Queuing slots that control the number of calls that can be placed into 911 were overloaded.
 - Components of the City's emergency dispatch operations still rely on outdated technologies that were unable to respond to the increased volume.
 - The duration of the outage exceeded the battery life/duration of radio systems and telecommunications equipment.
- Transportation
 - There is no central repository for recording and disseminating all transportation information during a large-scale event.
- Public Health, Safety and Preparedness
 - Many generators at hospitals and nursing homes had problems with switches, overheated, or malfunctioned. Transportation problems also created fuel shortages.
 - Despite outreach efforts from social service agencies to the estimated at one million disabled many individuals did not develop emergency plans or procure supplies.
 - Potable water was unavailable to high floors in high-rise buildings due to the loss of power to the water pumps.
 - One comfort station was opened in each of the five boroughs. However, these sites did not have sufficient emergency power to support cooling needs, were inaccessible to individuals in other areas and were not extensively utilized.

The following recommendations from the *New York City Emergency Response Task Force Report* are also applicable to Illinois:

- Conduct a back-up power survey and develop a back-up power installation plan. Emergency power generation for critical government functions need to be identified. Generator installation must be uniform. Fuel tanks must be of sufficient size and kept full.
- Enhance the City's emergency fuel management plan. Emergency fuel management plans should be reviewed to prioritize the most critical users and to ensure the ability to quickly expand available supply in the event of an emergency.
- Explore revisions to the building code to ensure evacuation safety and mitigation of emergency-related hazards. Code revisions include back-up generators in residential buildings, elevators returning to the ground floor, photo luminescent paint or glow strips and/or battery powered emergency lights, and public address systems.
- Back-up power systems at telecommunications facilities should be reviewed. Telephone companies should review central office locations to ensure that back-up systems are in proper working order and that adequate generation capabilities are in place.
- The overall 911 system should be reviewed to eliminate single points of failure.
- Implement alternatives to provide for traffic control at signalized intersections. Technological solutions include back-up power sources or deploying portable signals.
- Upgrade generator testing standards and emergency preparedness for health care facilities, such as blood banks, must be included. Safe storage and transport of perishable blood products during an outage must also be reviewed.

Appendix 7: Illinois Wind Resources Map



Appendix 8: Renewables Portfolio Standards (RPS) in Other States

State	Renewables Requirement	Notes
Arizona	0.2 in 2001, rising 0.2% per year to 1% in 2005, and to 1.05% in 2006, then to 1.1% in 2007 through 2012.	Competitive retail suppliers exempt until 2004. At least 50% must come from solar in 2001-2003, and 60% thereafter.
California	Utilities must purchase 20% from renewable resources by 2017 (must increase use of renewables by at least 1% each year beginning in 2003.)	Currently, 12% of electricity in state from renewables.
Connecticut	1998 Standard: Required 6% beginning in 2000, ramping up to 13% by 2009. Current Standard (passed June 2003): 6.5% by 7/1/2003, rising to 10% by 1/1/2010	Wind, solar, sustainable biomass, hydroelectric, landfill gas, or fuel cells.
Hawaii	8% by 2005, 10% by 2010, 15% by 2015, 20% by 2020.	Solar, wind, wave power
Iowa	Production requirement 105 MW (goal exceeded, current production 400 MW).	Wind, hydroelectric, biomass, methane
Maine	30% of retail sales in 2000 and thereafter as a condition of licensing.	Wind, solar, geothermal, tidal, hydro, biomass, municipal solid waste under 100 MW, and qualified small power generation facilities.
Maryland	Starting in 2007, 3 ½%, increasing 1 ½% every other year until 2019, ultimate goal of 9 ½ %.	System: Tier 1: wind, solar, biomass, methane. Tier 2: Large hydro and waste energy. Tier 1 must increase every other year, Tier 2 remains at 2 ½% every year.
Massachusetts	1% of sales in new renewables in 2003 or one year after any renewable is within 10% of average spot market price, and increasing by 0.5% per year to 4% by 2009 and 1% per year thereafter.	Eligible renewables include wind, advanced biomass, landfill gas, solar, fuel cells, geothermal or wave/tidal technologies.
Minnesota	Excel Energy mandated to produce 10% renewable by 2015. Other companies must make a "good faith effort" to produce 10% renewables by 2015.	Currently 2% from renewables, 500 MW from wind energy.
Nevada	5% by 2003 rising by 2% every two years until reaching 15% by 2013 and thereafter.	At least 5% from solar.
New Jersey	0.5% from Class I by 2001 (plus another 2.5% from Class I or II), increasing to 1% by 2006, then increases by 0.5% per year to 4% by 2012.	Class I: wind, solar, fuel cells, geothermal, wave/tidal, landfill/ methane gas, and sustainably harvested biomass. Class II: hydro or resource recovery facilities.
New Mexico	Restructuring and original RPS delayed until 2007 (5% by 2006, increasing by at least 1% until 10% attained in 2011), interim RPS under consideration for 5% by 2004	1 kWh wind, hydro = 1 kWh toward RPS; 1 kWh biomass, geothermal, landfill gas, fuel cell = 2 kWh toward RPS; 1 kWh solar = 3 kWh toward RPS.
New York	25% by 2012, currently renewables supply 17% of electricity sold	Wind, biomass
Pennsylvania	For PECO, West Penn, and PP&L, 20% of residential customers served by competitive default provider: 2% in 2001, increasing 0.5% per year; for GPU, 0.2% in 2001 for 20% of customers, increasing to 80% in 2004.	Requirements imposed on service-territory basis.
Texas	1280 MW of generating capacity from renewable technologies by January 2003; increasing to 1730 MW by January 2005, 2280 MW by January 2007, and 2880 MW by January 2009 (equal to 3%) (and maintained until 2019).	Wind, solar, geothermal, hydroelectric, wave or tidal energy, and biomass or biomass-based waste products including landfill gas. Establishes a credit-trading program administered by ERCOT.
Wisconsin	0.5 by 12/31/2001, increasing to 2.2% by 12/31/2011	0.6% can come from facilities installed before 1998. Wind, solar, biomass, geothermal, tidal, fuel cells and small hydro (less than 60 MW). Allows purchase of renewable credits.

Source: American Wind Energy Association, Minnesota Department of Commerce and Maryland Energy Administration

Appendix 9: Illinois Emergency Communications Network Members

Utilities

Alliant
Ameren/CILCO
CMS Panhandle Energy Pipeline Companies
ComEd
Dynegy Midwest Generation
Midwest Generation
Exelon Corporation
Illinois Electric Cooperatives
Illinois Energy Association
Illinois Municipal Electric Agency
Illinois Power Company
MidAmerican Energy Company
Mid-American Interconnected Network (MAIN)
Mt. Carmel Public Utility
Natural Gas Pipeline Co. (Kinder Morgan)
NICOR
Peoples Energy

Government

Chicago Emergency Communications Center
Illinois Emergency Management Agency
Illinois Environmental Protection Agency
Illinois Commerce Commission

Railroads

Burlington Northern Santa Fe
Canadian National/Illinois Central
Union Pacific

Water

Illinois American Water Company
Consumers Water Company

Telecommunications

AT&T
AT&T Wireless
AT&T Broadband
Cingular Wireless
First Cellular of Southern Illinois
Focal Communications Corporation
Gallatin River Communications
Illinois Telecommunications Association
McLeod USA
Lucent Technologies
Sprint
Sprint PCS
SBC Illinois
Verizon Communications

Appendix 10: Preparedness of Illinois State Agencies

The State Emergency Operations Center (SEOC) facilitates communication in case of emergencies. The Illinois Emergency Management Agency (IEMA) studies the state's preparedness to handle emergencies and provides coordination and direct services in times of emergency. IEMA analyzes the ability of state agencies to operate in case of power losses. This Appendix contains a description of the emergency preparedness of each major agency that participates in the State Emergency Operations Center.

Communications

The following table illustrates each agency's capabilities in the area of communication.

Agency	High Frequency Radio	Computer Uninterrupted Power Sources	Direct Lines/Phones not Needing Power	Cellular Phones	Satellite Communications
IEMA	Yes	No	Yes	Yes	Yes
State Fire Marshal	No	Yes	Yes	Yes	No
State Police	Yes	Yes	No	Yes	No
CMS	No	Yes	Yes	Yes	No
Corrections	No	No	No	Yes	No
Public Health	Yes	No	No	Yes	No
Commerce Commission	No	No	Reliant on SBC	Yes	No
Agriculture	No	Yes	Yes	Yes	No
Natural Resources	No	No	Yes	Yes	No
IDOT-Aeronautics	Yes	Yes	Yes	Yes	No
IDOT-Highways	Yes	No	Yes	Yes	No
IEPA	In cell phones	No	No	Yes	No

Electricity:

The following table illustrates each agency's electricity back-up capabilities.

Agency	Back-up Generator
IEMA	Yes
State Fire Marshal	Yes
State Police	Yes
CMS	Yes
Corrections	Yes
Public Health	No
Commerce Commission	No
Agriculture	Yes
Natural Resources	Yes
IDOT-Aeronautics	Yes
IDOT-Highways	Yes
IEPA	Yes

Summary of Agency Preparedness:

Illinois Commerce Commission

Due to the location of the ICC's main office building and due to the owner of the building, the ICC does not currently have a generator. The ICC communication system relies on SBC's availability of service. In the case of an emergency event, the ICC could provide a radio system to communicate from the SECO to the ICC office and then on to the ICC satellite offices around Illinois.

Illinois State Police

Each Illinois State Police (ISP) district headquarters has an emergency generator, which allows voice radio traffic from a base to a mobile unit for ISP primary dispatch and ISPERN communications. The ISP has available a High Frequency 4-channel radio to relay (via district to district) critical information to District 9 which can be rebroadcast on another voice radio channel to the SEOC. The Armory Building has an uninterrupted power supply plug-in (battery-powered) in the computer room and placed throughout the building to plug in to during times of emergency.

Illinois Department of Agriculture

The Illinois State Fairgrounds main office of the Department of Agriculture has a generator, however it only operates emergency lighting, the computer room, laboratories and critical equipment such as the fire alarm and elevator panel. Various other buildings at the fairgrounds have generators, yet they are simply to supply emergency lighting only. The Galesburg lab's generator supplies energy to supply the whole facility. The Centralia lab has a emergency generator.

Illinois Department of Natural Resources

The Illinois Department of Natural Resources has a back-up generator at their main facility to supply power to the computer network room and some law enforcement offices. Their uninterrupted power system includes exit signs, egress system, fire pump and the HVAC system. Of IDNR's five regional offices, only one has a generator.

Office of the State Fire Marshal

The Illinois State Fire Marshal's office is equipped with a generator as well as a Uninterruptible Power Supply that can provide power for 45 minutes to the OSFM Command Center, which is also the back-up State Emergency Operations Center. Currently the OSFM utilizes wire line and wireless communications (telephone, pager and fax).

Illinois Department of Public Health

IDPH is reviewing generator requirements as well as analyzing power usage to determine requirements and defining the process that will be used to provide power to their main office building in case of a blackout. IDPH mandates that all nursing homes and intermediate care facilities for the developmentally disabled have an emergency source of electrical power and an emergency water plan. The Chicago IDPH Lab is in the process of adding a generator for the bioterrorism portion of the building, not the whole lab. The Springfield IDPH lab has a generator, however it is mainly used for lighting exits and some equipment. The Carbondale IDPH lab has a generator but is not large enough to handle the whole load of the facility.

Illinois Department of Transportation—Highways

IDTO Districts 2-9 have local base stations, 47 MHz systems, programmable radios that can communicate with Illinois State Police (ISP) or Illinois Emergency Management Agency (IEMA), and most locations have generators that could power the radios in an emergency. District 1 uses a number of high band and UHF repeaters to communicate. There are back-up repeaters and satellite receivers that are used to improve the districts communication redundancy.

Communications between IDOT districts and Station One are dependant on dedicated phones. Districts 1, 2, 3 and 9 have IEMA supplied High Frequency communications systems. District 5 has a system but a permanent antenna installation has not been completed. Districts 4, 7 and 8 are located in areas where ISP has offices nearby and IEMA High Frequency communications systems are located at the ISP location. Districts 1 and 9 have back-up communication centers.

Illinois Department of Transportation—Aeronautics

The Illinois Department of Transportation Division of Aeronautics has a back-up generator that will operate the hangar doors and aircraft fueling pumps. A comprehensive manual back-up system to flight operations, scheduling and maintenance data will allow the normal operation of the aircraft fleet. A receptacle placed on the outside of the building can provide for a generator to be used from the Springfield Air National Guard. The power sources would be used during an extended power loss. Direct phones that can operate in a loss of power in addition to cell phones, pagers and radios would be the communications means IDOT-Aeronautics would use in the situation of a blackout.

Illinois Department of Corrections

The Illinois Department of Corrections currently operates 27 adult facilities with 7 connected satellite facilities, 8 juvenile facilities, 8 adult transition centers, 25 parole offices and the department headquarters and training academy in Springfield. All facilities with the exception of the Parole offices and Adult Transition facilities have fuel powered emergency back-up power to accommodate the basic electrical and communication functions of key areas within the facilities. The Parole offices and the Adult Transition facilities are leased properties, however they do not have handheld radios for short and intermediate distance communications.

Central Management Services

The Department of Central Management Services (CMS) maintains offices at various sites throughout the state, including regional offices and larger facilities in Chicago and Springfield. Almost all of these sites are connected in some way to the agency's computer and telecommunications network, but those in Springfield are the most important to critical functions such as Internet access and AMBER alert bulletins.

In Chicago, CMS' primary sites are the James R. Thompson Center (JRTC) and the Michael A. Bilandic Building (MABB). In the JRTC, battery-powered lighting in stairwells (with power for 45 minutes) will allow security and building staff necessary time to evacuate employees and the public in the event of a power failure. The Telecommunication Division has a communications node in the JRTC; the equipment room in which it is located has an Uninterruptible Power Supply capable of sustaining power for four hours. A vendor (SEPS) is on call to bring in and install a generator within that time frame if a prolonged power outage occurs.

The Michael A. Bilandic Building also has battery-powered evacuation lights in the stairwells. All stairwells are equipped with emergency telephones that are functional even if the building has no power. Also, during a power outage, stair doors automatically unlock.

In Springfield, the Bureau of Communications and Computer Services (BCCS) operates from several buildings, three of which house critical computer services. They are the Central Computer Facility (CCF or Data Center), the Harris Building and the Central Communications Center (CCC). The CCC also contains critical telecommunications infrastructure. All three are equipped with Uninterruptible Power Supply systems and generators and have alternate operations sites.

The primary concern with regard to Central Management Services during a prolonged, widespread power outage is that demands for water (for the CCF only) and fuel (for all facilities with diesel generators) must be met in a timely and dependable manner. Currently, fuel and water are purchased on state master contracts that do not specify priority or emergency delivery. Also, a post 9-11 ordinance in the City of Chicago specifies that no fuel trucks may drive through the city. This would pose a problem in getting fuel to a generator at the Thompson Center or Bilandic Building.

Another concern is the prioritized list of critical applications maintained by the CCF. Currently, Internet access is not included on that list. As long as the CCF is functional, Internet service will be uninterrupted; however, if the CCF were relocated to one of its back-up sites, the Internet would not be available to agencies that only have connectivity through the CCF. Also, the CMS list of prioritized applications/systems can be misleading. Many agencies' critical applications are completely supported by the CCF, while others are only partially supported.

Illinois Emergency Management Agency

The Illinois Emergency Management Agency operates out of numerous offices around the state. The most critical of sites in the State Emergency Operations Center (SEOC) and the Radiological Emergency Assessment Center (REAC) facility, which are both in Springfield. The SEOC can communicate via land and direct line phones, satellite phones, High Frequency radio, National Warning System (NAWAS) and various other specific hazard warning/communication devices.

The main office of IEMA is equipped with a generator, however the main office is not equipped with a proper Uninterruptible Power Supply to carry the load to the generator. In the near future, a new SEOC will be built with a state-of-the-art electrical system back-up. REAC is equipped with satellite communications, direct lines to the SEOC and to nuclear facilities around the state as well as an Uninterruptible Power Supply and onsite generator.

Glossary ⁷³

Active Power Also known as “real power.” The rate at which work is performed or that energy is transferred. The terms “active” or “real” power are often used in place of the term power alone to differentiate it from reactive power. The rate of producing, transferring or using electrical energy, usually expressed in kW or MW.

Blackstart Capability The ability of a generating unit or station to go from a shutdown condition to an operating condition and start delivering power without assistance from the electric system.

Bulk Electric System A term commonly applied to the portion of an electric utility system that encompasses the electrical generation resources and bulk transmission system.

Bus: Shortened from the word busbar, meaning a node in an electrical network where one or more elements are connected together.

Capacity: The rated continuous load-carrying ability, expressed in megawatts (MW) or megavolt-amperes (MVA) of generation, transmission, or other electrical equipment.

Cascading: The uncontrolled successive loss of system elements triggered by an incident at any location. Cascading results in widespread service interruption, which cannot be restrained from sequentially spreading beyond an area predetermined by appropriate studies.

Circuit: A conductor or a system of conductors through which electric current flows.

Circuit Breaker A switching device connected to the end of a transmission line capable of opening or closing the circuit in response to a command, usually from a relay.

Control Area An electric power system or combination of electric power systems to which a common automatic control scheme is applied in order to: match, at all times, the power output of the generators within the electric power system(s) and capacity and energy purchased from entities outside the electric power system(s); maintain, within the limits of Good Utility Practice, scheduled interchange with other Control Areas; maintain the frequency of the electric power system(s) within reasonable limits in accordance with Good Utility Practice; and provide sufficient generating capacity to maintain operating reserves in accordance with Good Utility Practices.

Contingency: The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch, or other electrical element. A contingency also may include multiple components, which are related by situations leading to simultaneous component outages.

Control Area Operator An individual or organization responsible for controlling generation to maintain interchange schedule with other control areas and contributing to the frequency regulation of the interconnection. The control area is an electric system that is bounded by interconnection metering and telemetry.

Current (Electric) The rate of flow of electrons in an electrical conductor measured in Amperes.

Distribution Network The portion of an electric system that is dedicated to delivering electric energy to an end user, at or below 69 kV. The distribution network consists primarily of low-voltage lines and transformers that “transport” electricity from the bulk power system to retail customers.

Disturbance: An unplanned event that produces an abnormal system condition.

Flowgate: A single or group of transmission elements intended to model MW flow impact relating to transmission limitations and transmission service usage.

Forced Outage The removal from service availability of a generating unit, transmission line, or other facility for emergency reasons or a condition in which the equipment is unavailable due to unanticipated failure.

Frequency: The number of complete alternations or cycles per second of an alternating current, measure in Hertz. The standard frequency in the United States is 60 Hz.

Generation (Electricity) The process of producing electric energy from other forms of energy; also, the amount of electric energy produced, usually expressed in kilowatt hours (kWh) or megawatt hours (MWh).

Generation System One or more power plants that produce electricity. Electricity is typically generated at 35kV or lower voltage and “stepped up” to transmission voltage at the power plant.

Generator: Generally, an electromechanical device used to convert mechanical power to electrical power.

Grid: An electrical transmission and/or distribution network.

Imbalance: A condition where the generation and interchange schedules do not match demand.

Independent System Operator (ISO) organization responsible for the reliable operation of the power grid under its purview and for providing open transmission access to all market participants on a nondiscriminatory basis. An ISO is usually not-for-profit and can advise other utilities within its territory on transmission expansion and maintenance but does not have the responsibility to carry out the functions.

Interconnected System: A system consisting of two or more individual electric systems that normally operate in synchronism and have connecting tie lines.

Interface: The specific set of transmission elements between two areas or between two areas comprising one or more electrical systems.

Kilovolt (kV): Unit of electrical potential equal to 1,000 Volts.

Load (Electric) The amount of electric power delivered or required at any specific point or points on a system. The requirement originates at the energy-consuming equipment of the consumers. Load should not be confused with demand, which is measure of power that a load receives or requires.

Load Shedding The process of deliberately removing (either manually or automatically) pre-selected customer demand from a power system in response to an abnormal condition, to maintain the integrity of the system and minimize overall customer outages.

Market Participant An entity participating in the energy marketplace by buying/selling transmission rights, energy, or ancillary services into, out of, or through an ISO-controlled grid.

NERC Interregional Security Network (ISN) communications network used to exchange electric system operating parameters in near real time among those responsible for reliable operations of the electric system. The ISN provides timely and accurate data and information exchange among reliability coordinators and other system operators. The ISN is a private Intranet that is capable of handling additional applications between participants.

Operating Criteria: the fundamental principles of reliable interconnected systems operation, adopted by NERC.

Operating Procedure: A set of policies, practices, or system adjustments that may be automatically or manually implemented by the system operator within a specified time frame to maintain the operational integrity of the interconnected electric systems.

⁷³ Glossary definitions taken from Appendix C Electricity Glossary, U.S.-Canada Power System Outage Task Force, November 2003.

Outage:The period during which a generating unit, transmission line, or other facility is out of service.

Post-contingency Operating Procedures: Operating procedures that may be invoked by the system operator to mitigate or alleviate system problems after a contingency has occurred.

Protective Relay:A device designed to detect abnormal system conditions, such as electrical shorts on the electric system or within generating plants, and initiate the operation of circuit breakers or other control equipment.

Reactive Power:The portion of electricity that establishes and sustains the electric and magnetic fields of alternating-current equipment. Reactive power must be supplied to most types of magnetic equipment, such as motors and transformers. It also must supply the reactive losses on transmission facilities. Reactive power is provided by generators, synchronous condensers, or electrostatic equipment such as capacitors and directly influences electric system voltage. It is usually expressed in kilovars (kVAR) or megavars (MVAR). The mathematical product of voltage and current consumed by reactive loads. Examples of reactive power loads include capacitors and inductors. These types of loads, when connected to an alternating current voltage source, will draw current, but because the current is 90 degrees out of phase with the applied voltage, they actually consume no real power in the ideal sense.

Regional Transmission Operator (RTO):An organization that is independent from all generation and power marketing interests and has exclusive responsibility for electric transmission grid operations, short-term electric reliability, and transmission services within a multi-State region. To achieve those objectives, the RTO manages transmission facilities owned by different companies and encompassing one, large, contiguous geographic area.

Relay:A device that controls the opening and subsequent reclosing of circuit breakers. Relays take measurements from local current and voltage transformers, and from communication channels connected to the remote end of the lines. A relay output trip signal is sent to circuit breakers when needed.

Reliability:The degree of performance of the elements of the bulk electric system that results in electricity being delivered to customers within accepted standards and in the amount desired. Reliability may be measured by the frequency, duration and magnitude of adverse effects on the electric supply. Electric system reliability can be addressed by considering two basic and functional aspects of the electric systems—adequacy and security.

Reliability Coordinator:An individual or organization responsible for the safe and reliable operation of the interconnected transmission system for their defined area, in accordance with NERC reliability standards, regional criteria and subregional criteria and practices.

Resistance:The characteristic of materials to restrict the flow of current in an electric circuit. Resistance is inherent in any electric wire, including those used for the transmission of electric power. Resistance in the wire is responsible for heating the wire as current flows through it and the subsequent power loss due to that heating.

SCADA:Supervisory Control and Data Acquisition system; a system of remote control and telemetry used to monitor and control the electric system.

Security:The ability of the electric system to withstand sudden disturbances such as electric short circuits or unanticipated loss of system elements.

Stability:The ability of an electric system to maintain a state of equilibrium during normal and abnormal system conditions or disturbances.

State Estimator:Computer software that takes redundant measurements of quantities related to system state as input and provides an estimate of the system state (bus voltage phasors). It is used to confirm that the monitored electric power system is operating in a secure state by simulating the system both at the present time and one step ahead, for a particular network topology and loading condition. With the use of a state estimator and its associated contingency analysis software, system operators can review each critical contingency to determine whether each possible future state is within reliability limits.

Substation:Facility equipment that switches, changes, or regulates electric voltage.

Subtransmission:A functional or voltage classification relating to lines at voltage levels between 69 kV and 115 kV.

Surge:A transient variation of current, voltage or power flow in an electric circuit or across an electric system.

Switching Station:Facility equipment used to tie together two or more electric circuits through switches. The switches are selectively arranged to permit a circuit to be disconnected, or to change the electric connection between the circuits.

System:An interconnected combination of generation, transmission and distribution components comprising an electric utility and independent power producers (IPP), or group of utilities and IPPs.

System Operator:An individual at an electric system control center whose responsibility it is to monitor and control that electric system in real time.

System Reliability:A measure of an electric system's ability to deliver uninterrupted service at the proper voltage and frequency.

Thermal Limit:A power flow limit based on the possibility of damage by heat. Heating is caused by the electrical losses which are proportional to the square of the *active power* flow. More precisely, a thermal limit restricts the sum of the squares of *active* and *reactive power*.

Transfer Limit:The maximum amount of power that can be transferred in a reliable manner from one area to another over all transmission lines (or paths) between those areas under specified system conditions.

Transformer:A device that operates on magnetic principles to increase (step up) or decrease (step down) voltage.

Transmission:An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.

Transmission Overload:A state where a transmission line has exceeded either a normal or emergency rating of the electric conductor.

Voltage:The electrical force, or "pressure," that causes current to flow in a circuit, measured in Volts.

Voltage Collapse (decay):An event that occurs when an electric system does not have adequate reactive support to maintain voltage stability. Voltage Collapse may result in outage of system elements and may include interruption in service to customers.

Voltage Limits:A hard limit above or below which is an undesirable operating condition. Normal limits are between 95 and 105 percent of the nominal voltage at the bus under discussion.

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